

REMARKS

Applicants thank the Examiner for total consideration given the present application. Claims 1-10 are pending of which claims 1-3 are independent. Claims 3-6 are withdrawn as being directed to a non-elected invention. Claims 1, 2, 7, and 9 have been amended through this Reply. Upon careful review, one would conclude that this amendment does not raise any new issue nor does it add any new matter to the application. Amendment has been made to the application in order to further clarify the invention. Applicants respectfully request reconsideration of the rejected claims in light of the remarks presented herein, and earnestly seek timely allowance of all pending claims.

35 U.S.C. § 112, SECOND PARAGRAPH REJECTION

Claims 7 and 9 stand rejected under 35 U.S.C. § 112, first paragraph, for allegedly containing subject matter not described in the Specification in such a way as to reasonably convey to one skilled in the art that the inventor had possession of the claimed invention at the time of filing. Applicants respectfully traverse this rejection.

Applicants point out that MPEP § 2163 sets forth guidelines for the examination of patent applications under the "Written Description" requirement of 35 U.S.C. § 112, first paragraph. Specifically, the second paragraph of MPEP § 2163.I.B indicates that the requirement for the Specification to support added claim limitations is not an *haec verba* requirement (i.e., the Specification is not required to use the exact language in the claims). Instead, this section of the MPEP indicates that the Specification may support added claim limitations through express, implicit, or inherent disclosure.

Furthermore, MPEP § 2163.II.A lists the methodology for the Examiner to follow in order to determine the adequacy of the Written Description. This methodology includes the following steps:

1. For each claim, determine what the claim as a whole covers;
2. Review the entire application to understand how Applicants provide support for the claimed invention including each element and/or step; and

3. Determine whether there is sufficient Written Description to inform a skilled artisan that Applicants were in possession of the claimed invention as a whole at the time the application was filed.

Applicants respectfully submit that the Examiner did not follow this methodology in rejecting the claims. Instead, it appears that the Examiner concluded that the particular claim elements, i.e., “a first mirror” and “a second mirror” are not described in the Specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention because the exact language is not found in the Specification. Applicants respectfully submit that such analysis is not permitted according to the aforementioned methodology required by the MPEP.

Furthermore, Applicants submit that the claimed first and second mirrors are implicitly described in the Specification and Figures. For example, Figs. 2 and 3 and the paragraph bridging page 8 and 9, disclose that the optical multiplexer 40 can be realized by utilizing their dependency of an angle of refraction or an angle of reflection on a wavelength in a wavelength dispersion element such as a prism or diffraction grating. Accordingly, Applicants respectfully submit that those of ordinary skill in the art would immediately recognize that the claimed “first mirror” and “second mirror” are described in the Specification so as to convey that the inventor had possession of the claimed invention at the time of filing. Applicants again wish to remind the Examiner that there is no requirement that the Specification use the exact language of the claims.

Although Applicants do not necessarily agree with the Examiner that the claim terms “a first mirror” and “a second mirror” are not described in the Specification, claims 7 and 9 have been amended to replace “mirror” with “prism” in order to expedite prosecution. Therefore, Applicants respectfully request reconsideration and withdrawal of this rejection.

35 U.S.C. § 103 REJECTION – Kobayashi, Riza, Izadpanah, Hong, Takushima

A. Claim 1 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kobayashi et al. (Japanese Patent Application Publication No. JP406276017)[hereinafter “Kobayashi”] in view of Riza (U.S. Patent No. 5,187,487)[hereinafter “Riza”]. Applicants respectfully traverse.

Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness. To establish a *prima facie* case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Additionally, there must be a reason why one of ordinary skill in the art would modify the reference or combine reference teachings to obtain the invention. A patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. *KSR Int'l Co. v Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007). There must be a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. *Id.* The Supreme Court of the United States has recently held that the "teaching, suggestion, motivation test" is a valid test for obviousness, albeit one which cannot be too rigidly applied. *Id.* Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *Id.*

In this instance, it is respectfully submitted that neither Kobayashi nor Riza, alone or in combination, teaches or suggests all claim limitations.

For example, claim 1 recites, *inter alia*, "***an optical multiplexer for converting the first and second signal light beams different in wavelength outputted from the spatial optical modulator into a single multiplex output signal light beam to travel through one and same coaxial optical path.***" (*Emphasis added.*)

It is respectfully submitted that neither Kobayashi nor Riza teaches the above-identified claim feature.

Kobayashi is directed to a conventional antenna feeder circuit that is concerned with multi-beam formation in which directions of a plurality of beams are determined based on positions of masks, respectively. Kobayashi's antenna feeder circuit includes two or more laser light sources, an optical distributor, a spatial light modulation device, a laser beam modulator, and an optical multiplexer 13.

The Examiner relies on the optical multiplexer 13 of Kobayashi as disclosing the above-identified claim feature. It is respectfully submitted that the optical multiplexer 13 of Kobayashi does not *convert a first and second signal light beams different in wavelength outputted from a spatial optical modulator into a single multiplex output signal light beam to travel through one and same coaxial optical path.*

Contrary to the claimed invention, multiplexer 13 of Kobayashi multiplexes an optical signal generated with each modulator, and outputs to each radiating element correspondence of the array antenna. Then, a light/electric transducer changes the optical signal corresponding to each radiating element into an electrical signal, respectively, and extracts a high frequency signal corresponding to each antenna beam, and supplies to each radiating element. (See paragraph [0018].) Indeed, Kobayashi clearly discloses that multiplexing is carried out and it is led to two or more optical transmission lines. (See paragraphs [0031] and [0033].) Thus, in Kobayashi, the multiplexer 13 outputs a plurality of light beams to travel through different optical paths.

The Examiner continues to rely on paragraph [0031] of Kobayashi as disclosing the above-identified claim feature. As previously indicated, in the optical control type microwave phase controller of Kobayashi, no more than one microwave phase wave surface can be formed by one spatial optical modulator, and therefore, the conventional phase controller cannot generate feed signals for an array antenna for radiating a plurality of microwave beams. Further, although Kobayashi discloses an antenna feeder circuit that is concerned with multi-beam formation, directions of a plurality of beams are determined based on positions of masks, respectively. As a result, Kobayashi's antenna feeder cannot direct a plurality of beams in a same direction or cannot superimpose. Therefore, in Kobayashi's antenna feeder circuit, directions of a plurality of beams are limited among the mutual beams. Accordingly, the optical multiplexer 13 of Kobayashi cannot convert a first and second signal light beams different in wavelength outputted from a spatial optical modulator into a single multiplex output signal light beam to travel through one and same coaxial optical path.

The claimed invention solves that above-noted problems associated with conventional optical control type microwave phase controller by providing an improved optical type

microwave phase forming device which is capable of simultaneously forming a plurality of microwave phase surfaces using one spatial optical modulator. More specifically, the claimed invention can convert two lights into a single multiplex output light beam to travel through one and same coaxial optical path. (*Emphasis added.*)

Riza has not been, and indeed cannot be, relied upon to fulfill the above-noted deficiency of Kobayashi.

Therefore, at least the above reasons, it is respectfully requested to withdraw the rejection of claim 1 based on Kobayashi and Riza.

B. Claim 2 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kobayashi and Riza, and further in view of Izadpanah et al. (U.S. Patent No. 7,020,396 B2)[hereinafter “Izadpanah”] and Hong et al. (U.S. Patent No. 4,965,603)[hereinafter “Hong”]. This rejection is respectfully traversed.

Amended claim 2 also recites, *inter alia*, “***an optical multiplexer for converting the first and second signal light beams different in wavelength outputted from the spatial optical modulator into a single multiplex output signal light beam to travel through one and same coaxial optical path.*” (*Emphasis added.*) As demonstrated above in great detail, neither Kobayashi nor Riza teaches the above-identified claim feature. Izadpanah and Hong have not been, and indeed cannot be, relied upon to fulfill the above-noted deficiency of Kobayashi and Riza.**

Accordingly, it is respectfully it is respectfully requested to withdraw the rejection of claim 2 based on Kobayashi, Riza, Izadpanah, and Hong.

C. Claims 7 and 8 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kobayashi and Riza, as applied to claim 1 above, and further in view of Takushima et al. (U.S. Patent No. 6,810,170 B2)[hereinafter “Takushima”]. This rejection is respectfully traversed.

Claims 7 and 8 depend from claim 1. Amended claim 1 recites, *inter alia*, “***an optical multiplexer for converting the first and second signal light beams different in wavelength***

outputted from the spatial optical modulator into a single multiplex output signal light beam to travel through one and same coaxial optical path.” (Emphasis added.) As demonstrated above in great detail, neither Kobayashi nor Riza teaches the above-identified claim feature. Takushima has not been, and indeed cannot be, relied upon to fulfill the above-noted deficiency of Kobayashi and Riza.

Accordingly, it is respectfully it is respectfully requested to withdraw the rejection of claims 7 and 8 based on Kobayashi, Riza, and Takushima.

D. Claims 9 and 10 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kobayashi, Riza, Izadpanah, and Hong as applied to claim 2 above, and further in view of Takushima. This rejection is respectfully traversed.

Claims 9 and 10 depend from claim 2. Amended claim 2 recites, *inter alia*, “***an optical multiplexer for converting the first and second signal light beams different in wavelength outputted from the spatial optical modulator into a single multiplex output signal light beam to travel through one and same coaxial optical path.***” (Emphasis added.) As demonstrated above in great detail, none of Kobayashi, Riza, Izadpanah, and Hong teaches the above-identified claim feature. Takushima has not been, and indeed cannot be, relied upon to fulfill the above-noted deficiency of Kobayashi, Riza, Izadpanah, and Hong.

Accordingly, it is respectfully it is respectfully requested to withdraw the rejection of claims 9 and 10 based on Kobayashi, Riza, Izadpanah, Hong, and Takushima.

CONCLUSION

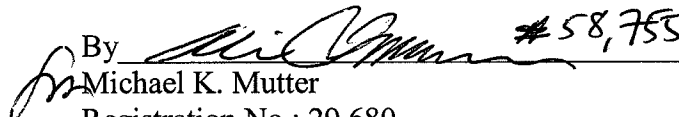
In view of the above amendment, Applicants believe the pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Ali M. Imam Reg. No. 58,755 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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